In the Drawings:

Please enter the enclosed two Replacement Sheets bearing Figs. 3 (revised), 4 and 6 (revised), to replace the corresponding original drawing sheets. In Fig. 3 the erroneous reference number "5" has been corrected to --20-- according to the written description at page 14 lines 7 to 13. In Fig. 6 the reference number "22" has been changed to --29-- along with the written description at page 17 line 14 to avoid duplicative inconsistent use of the number "22". Approval and entry of the Replacement Sheets are respectfully requested.

[RESPONSE CONTINUES ON NEXT PAGE]

REMARKS:

1) The Examiner's attention is directed to the enclosed drawing transmittal and two Replacement Sheets of drawings. In Fig. 3, the erroneous reference number "5" has been changed to --20--, and in Fig. 6 the erroneous reference number "22" has been changed to --29--, respectively to avoid ambiguous duplicative use of the reference numbers "5" and "22". This correction does not involve any new matter. Entry and acceptance of the Replacement Sheets are respectfully requested. Furthermore, referring to item 10) of the Office Action Summary, please indicate the acceptance of the drawings in the next action.

2) In accordance with the PCT procedures, the original specification of this application was a direct literal translation of the foreign language text of the corresponding PCT International Application. The specification has now been amended in an editorial and formal manner to better comply with US Application form (for example with section headings, and without reference to particular claim numbers in the description). A paragraph has been moved from the Summary of the Invention section to the Background Information section. A few minor editorial corrections (e.g. reference numbers) and clarifications have been made. Entry of these amendments is respectfully requested.

3) Further in accordance with the PCT procedures, the original claims were a direct literal translation of the foreign language claims of the corresponding PCT International application. Those

translated claims 21 to 40 have been canceled, and new claims 41 to 56 have been introduced. The new claims have been drafted "from the ground up" as a fresh approach at covering inventive subject matter with a somewhat different claim style, form and terminology in comparison to the literally translated PCT claims. Namely, the new claims have been drafted in view of typical US claim practice. The new claims are supported by subject matter from the original claims as shown in the following table, and do not introduce any new matter. Entry and consideration of the new claims are respectfully requested.

new claims	41	42	43	44	45	46	47
original support	Cl 21, 23, 25	Cl 21, 22	Cl 24	Cl 25, 40	Cl 40	Cl 26	Cl 21, 22, 27

new claims	48	49	50	51	52	53	54	55	56
original support	Cl 28	Cl 29	Cl 30	Cl 31	Cl 32	Cl 33	Cl 36, 37	Cl 36, 38	Cl 21, 34, 35

4) Referring to section 6 on page 4 of the Office Action, the indication of allowable subject matter in prior claims 35, 37 and 38 is appreciated. New independent claims 54, 55 and 56 each respectively contain allowable subject matter as follows.

New independent claim 54 recites subject matter from prior claims 36 and 37. Therefore, claim 54 should now be allowable.

New independent claim 55 recites subject matter from prior claims 36 and 38. Therefore, claim 55 should now be allowable.

New independent claim 56 recites subject matter from prior claims 21, 34 and 35. Therefore, claim 56 should now be allowable.

5) Referring to section 2 on page 2 of the Office Action, the rejection of claims 21, 22 and 27 to 32 as anticipated by US Patent 7,083,199 (Graeber et al.) is respectfully traversed.

It seems that US Patent 7,083,199 is not applicable under 35 USC 102(e). Nonetheless, the counterpart PCT Publication WO 2003/039894 would be applicable as prior art as of its PCT publication date of May 15, 2003. It is assumed that the PCT Publication disclosure corresponds to the US Patent, but the PCT Publication has not been thoroughly reviewed in this regard.

New independent claim 41 recites subject matter from prior claims 21, 23 and 25. Particularly, claim 41 recites that the inventive arrangement comprises a strain sensor unit comprising a foil strain gage and electrical connecting pins. The foil strain gage includes a measuring grid covered with insulating layers on the two opposite sides of the measuring grid. The connecting pins are electrically conductively connected to the measuring grid and extend perpendicularly from the measuring grid. The strain sensor unit is integrated into a fiber composite component, in that the strain gage is sandwiched between at least one of the fiber layers on a first side of the strain gage and at least one of the fiber layers on a second side of the strain gage opposite the first side. The connecting pins extend perpendicularly through and protrude outwardly from the at least one fiber layer on at least one side of the strain gage so that contact portions of the connecting pins are externally accessible for making electrical contact therewith outside of the fiber layers of the fiber composite component.

Because prior claims 23 and 25 were not included in this anticipation rejection based on Graeber et al., this rejection cannot apply against present new independent claim 41. Namely, Graeber et al. do not disclose the abovementioned features of new claim 41. Graeber et al. generally disclose that a wire strain gage as a force measuring device can be integrated or embedded in the plastic material of a component that consists of fiber-reinforced plastics or plastic composite systems (col. 2 lines 51 to 59 and col. 3 lines 4 to 10). However, Graeber et al. do not disclose any details of how that is to be achieved. Particularly, Graeber et al. do not disclose that a sensor unit shall include connecting pins electrically connected to and extending perpendicularly from a measuring grid of a foil strain gage. Furthermore, Graeber et al. do not disclose that the strain gage shall be sandwiched between fiber layers of the fiber composite component on both sides of the strain gage, while the connecting pins extend perpendicularly through and protrude outwardly from the fiber layers on at least one side. Thus, present independent claim 41 is not anticipated by the reference.

Furthermore, because the reference provides absolutely no disclosure and no suggestions whatsoever toward the special features of present claim 41, this claim also would not have been obvious. A person of ordinary skill in the art reading the Graeber et al. disclosure would have been motivated to try to embed a wire strain gage in a fiber composite component, but would not have found any teaching, suggestion, or motivation, or a common sense understanding, or a predictable result that could reasonably be expected to be achieved by following known

teachings, toward the special features of a strain gage sandwiched between layers of the fiber composite material and connecting pins extending perpendicularly from the measuring grid of the strain gage and perpendicularly through the fiber layers so as to protrude outwardly from the fiber composite component. Contrary thereto, the reference teaches to embed the strain gage in the plastic material rather than sandwiched between fiber layers. Also, Fig. 1 appears to show wire connections of the strain gages lying parallel in the plane of the component rather than extending perpendicularly through and protruding out of the component. Thus, with such teachings directly contrary to the present invention, claim 41 also would not have been obvious.

The dependent claims 42 to 53 are patentable already due to their dependence.

For the above reasons, the Examiner is requested to withdraw the anticipation rejection applying Graeber et al.

6) Referring to section 3 on page 3 of the Office Action, the rejection of claims 21 to 26, 34, 36, 39 and 40 as anticipated by US Patent 4,307,371 (Ort) is respectfully traversed.

As discussed above, all of the prior claims have been canceled, and new independent claim 41 recites features from prior claims 21, 23 and 25. The above discussion of claim 41 is incorporated here by reference and reiterated, because it also applies in comparison to the Ort reference.

Contrary to present claim 41, Ort does not disclose an arrangement including a foil strain gage sandwiched between fiber layers of a fiber composite material. The Examiner's assertion

in this regard is respectfully traversed as inaccurate. It is true that Ort discloses a foil strain gage embedded in an organic material (col. 2 line 61). However, there is no disclosure and no suggestion that the "organic material" is a fiber reinforced composite material. The only disclosures regarding organic materials in which the foil strain gage is embedded, relate to conventional organic encapsulating materials such as "epoxy resin, polymethane and phenolic resin" (see col. 1 lines 11 to 13, 51 and 63, col. 2 lines 17 to 22 and 39 to 45). Those are not fiber composite materials. There is no disclosure and no suggestion of embedding the strain gage between fiber layers of a fiber composite material. It was not previously known to arrange a foil strain gage in a fiber composite material as now claimed, and persons of ordinary skill in the art recognize that a fiber composite material has significantly different characteristics relative to a (non-fiber-reinforced) organic material such as "epoxy resin, polymethane, or phenolic resin", because the fibers purposely change the strain behavior of the material. Thus, the mere mention of "an organic material" such as epoxy resin or phenolic resin would not haven given any indication to instead use a fiber reinforced composite material.

Furthermore, the organic material of Ort is used simply as an innermost layer of an encapsulation on top of the strain gage, which is further coated with a moisture-proof layer such as a metal layer. Th strain gage is mounted on a strainable body (1, 10), by which applied forces or stresses are converted to strains that can be measured by the strain gage. Then, the strain gage is further covered by a buffer layer (3) of epoxy resin or the

like, which is then further covered by a galvanized layer (5) or a vapor deposited layer (7) of metal. As can be seen in Figs. 1, 2 and 3 of the reference, the encapsulated strain gage (2) is not sandwiched between fiber composite layers of a fiber composite component, but rather is arranged between a (generally metal) strainable body (1, 10) on the bottom of the strain gage, and an epoxy resin layer (3), a metal-filled resin layer (4) and a galvanized metal layer (5) or a vapor deposited metal layer (7) on the top of the strain gage. There are no fiber reinforced composite material layers at all, and especially there are no such layers on the bottom side of the strain gage, i.e. between the strain gage (2) and the metal strainable body (1, 10).

The strain gage (2) of Ort is electrically contacted by pins (15, 16) that are soldered onto terminals (12, 13) of the foil strain gage (14), and extend perpendicularly from the strain gage into a bored hole (11) in the metal strainable body or pick-up (1, 10). Inside this bored hole (11), a cable (18) is soldered to the pins (15, 16) which extend through a glass seal (17), and this cable leads out of the strainable body parallel to the planar extension thereof. Thus, even if the metal strainable body or pick-up (1, 10) is regarded as the fiber composite component (which it is not), it is clear that the electrical contact pins (15, 16) do not extend all the way through the thickness of the component from one side of the strain gage so as to protrude outwardly beyond the surface of the component. Instead, the perpendicularly extending pins (15, 16) are soldered to a cable (18) within the thickness of the strainable body (1,

10), and the cable leads out of the strainable body parallel to the planar extension thereof.

For the above reasons, the invention of present claim 41 is not anticipated by and would not have been obvious over the Ort reference. Therefore, the Examiner is respectfully requested to withdraw the anticipation rejection applying Ort.

7) Referring to section 5 on pages 3 and 4 of the Office Action, the rejection of claim 33 as obvious over Graeber et al. in view of Ort is respectfully traversed.

Features from prior claim 33 are now recited in new claim 53, which depends from claim 41, which has been discussed above in comparison to Graeber et al. and in comparison to Ort.

Even if Graeber et al. and Ort would have been considered in combination, the present invention still would not have been suggested. In the Ort arrangement, the strain gage is mounted on a metal strainable body (1, 10) in order to measure the strain induced in this strainable body. According to Graeber et al., the strain gage can be embedded in a plastic material of a fiber reinforced composite body in order to measure the strain in that fiber reinforced composite body. But, Graeber et al. do not disclose any details of how such mounting of the strain gage on the fiber reinforced body should be carried out. If the ordinary skilled artisan would have turned to Ort in this regard, the teachings would have been to apply the strain gage on the surface of the fiber reinforced composite body, and to cover the outer surface of the strain gage with an epoxy layer and a metal layer for moisture-proof encapsulation, and to provide a cable

penetrating into the fiber reinforced composite body in a direction parallel to the plane thereof, and to solder this cable onto electrical connection pins extending perpendicularly from the strain gage within the body thickness of the strainable body. Thus, even such a combined consideration of the two references would not have suggested the pertinent features of the present invention, namely that the strain gage must be sandwiched between fiber layers of the fiber composite component on both sides of the strain gage, and the connecting pins must extend perpendicularly from the measuring grid of the strain gage and extend perpendicularly through and protrude outwardly from the at least one fiber layer on at least one side of the strain gage so that contact portions of the connecting pins are externally accessible for making an external electrical contact.

Therefore, the invention of independent claim 41 would not have been obvious. Already in view of its dependence, claim 53 is also patentable. Furthermore, the combined references have nothing to do with an electrical device adapted to identify the measuring location of the strain gage in the fiber composite component, as recited in present claim 53.

For the above reasons, the Examiner is respectfully requested to withdraw the obviousness rejection applying Graeber et al. in view of Ort.

8) The dependent claims are patentable already in view of their dependence from claim 41, so that they do not require individual discussion as this time. Nonetheless, it is respectfully submitted that the inventive features, which are now more clearly

defined in a US claim style in the dependent claims, further distinguish the invention over the prior art. The Examiner is respectfully requested to consider the new dependent claims in comparison to the prior art.

9) Referring to section 7 on page 4 of the Office Action, the additional prior art made of record requires no particular comments because it has not been applied against the claims.

10) Favorable reconsideration and allowance of the application, including all present claims 41 to 56, are respectfully requested.

Respectfully submitted,

By _____
Walter F. Fasse
Patent Attorney
Reg. No.: 36132
Tel. 207-862-4671
Fax. 207-862-4681
P. O. Box 726
Hampden, ME 04444-0726

WFF:he/4949
Enclosures:
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_____ 1/9/09
Name: Walter F. Fasse - Date: January 9, 2009